

NEPETA HEDERACEA (L.) Trevisan. Abundant at Honeysuckle Spring, *Drouet*, Apr. 8, 1932.

*GRATIOLA VIRGINIANA L. *G. sphaerocarpa* Ell. Pond at Persinger, *Jeffrey & Drouet*, June 27, 1933; pond in County Road Prairie, *Drouet* 596, July 1, 1933. See RHODORA 20: 65. 1918.

PENTSTEMON TUBIFLORUS Nutt. *Daniels*, June 1903.

*LONICERA JAPONICA Thunb. Persisting on a high shaded bank at Honeysuckle Spring, *Rickett* 12, May 3, 1931, *Baker*, June 11, 1931. Also observed spreading along roadsides and in abandoned yards.

TRIOSTEUM PERFOLIATUM var. AURANTIACUM (Bicknell) Wieg. *T. aurantiacum* Bickn. "Open woods," *Daniels*, Aug. 1902. See RHODORA 25: 199. 1923.

*VIBURNUM BUSHII Ashe. Limerick, *Drouet* 382, May 5, 1933; near Lover's Leap, *Drouet* 488, June 7, 1933; Bear Spring, *Jeffrey*, June 12, 1933; Persinger, *Drouet* 588, June 27, 1933. See Journ. Elisha Mitchell Sci. Soc. 40: 48. 1924.

*DIPSACUS SYLVESTRIS Huds. Hillside by Grindstone Creek, *Rickett* 246, May 7, 1932.

ECHINO CYSTIS LOBATA (Michx.) T. & G. A specimen consisting of a portion of a dried fruit, *Daniels*, 1897, has recently been discovered.

SPECULARIA LEPTOCARPA (Nutt.) Gray. Hermit Hill, *Drouet*, June 8, 1932, *Drouet* 406, May 21, 1933; hills along Bonne Femme Creek, *Jeffrey & Drouet*, June 24, 1933.

LOBELIA CARDINALIS L. Rediscovered in "swamp south," *Drouet* 185, Sept. 2, 1932, *Mock & Drouet*, Aug. 4, 1932. Reported from low ground along Cedar Creek (*Jeffrey*).

HELENIUM ALTISSIMUM Link. The *H. autumnale* of the *Flora*. See N. Am. Fl. 34 (2): 126.

KUHNIA SUAVEOLENS Fresen. *K. eupatorioides* var. *corymbulosa* T. & G. All specimens previously called *K. eupatorioides*.

RUDBECKIA FULGIDA L. "Edge of cliff n. w. of dam," *Daniels*, 1903.

RUDBECKIA SUBTOMENTOSA Pursh. Rediscovered in "swamp south" and vicinity, *Drouet* 109 & 114, Aug. 4, 1932, *Drouet* 184, Sept. 2, 1932.

SOLIDAGO SPECIOSA Nutt. Abundant in "thickets on bluffs" above Hinkson Creek, as described by *Daniels* (ibid., p. 225). See *Rickett's* comment in the *Flora*, p. 80.

DEPARTMENT OF BOTANY,
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RECENT DISCOVERIES IN THE NEWFOUNDLAND FLORA

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(Continued from page 346)

ARNICA TOMENTOSA J. M. Macoun, *Pittonia*, iv. 168 (1900). *A. pulchella* Fern. RHODORA, xvii. 18 (1915), xxvi. 104, t. 143, fig. 2 (1924). ST. JOHN BAY: peaty and turfy margins of dry limestone

barrens, Old Port au Choix, *Fernald, Long & Fogg*, nos. 2127, 2128; turfy margins of gravelly limestone barrens, Eastern Point, no. 2129. PLATE 269, FIGS. 3-5.

The Newfoundland plants are mostly much larger than the Rocky Mt. specimens (just as are those of *A. Louiseana*), but I am unable to find any morphological detail to separate them. The species is well named, the very white-tomentose stems, involucre and erect basal leaves shining in the sunlight like white silver. The plants about St. John Bay are excessively tomentose, but the series shows such transition to the plant of Table Mt., Port au Port Bay, described as *A. pulchella*, that it is necessary to reduce *A. pulchella* to *A. tomentosa*. The disruption of range of this species is strikingly like that of *A. chionapappa* Fern. (MAP 29) and of *A. Louiseana* (MAP 30). See p. 53.

**A. PLANTAGINEA* Pursh. PISTOLET BAY and HA-HA BAY: turfy limestone barrens, Cape Norman, *Wiegand, Griscom & Hotchkiss*, nos. 29,213; mossy talus of diorite cliffs, Ha-Ha Mt., *Fernald & Long*, no. 29,215.

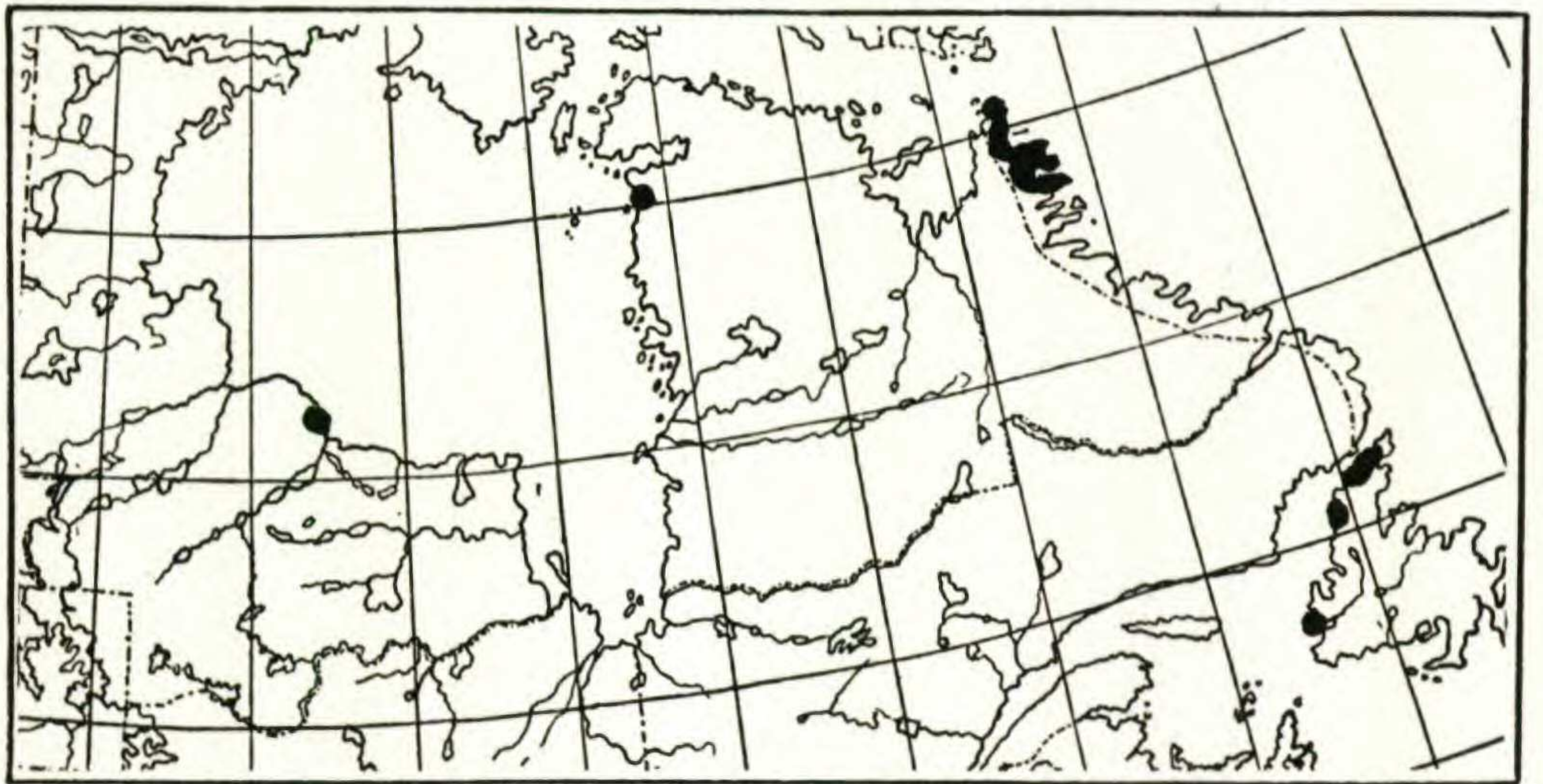
Arnica plantaginea, heretofore recorded only from the northern part of the Labrador Peninsula, was collected in northern Newfoundland in 1925, the material then misidentified and reported as *A. pulchella* Fern.

A. TERRAE-NOVAE Fern. RHODORA, xxvii. 90 (1925). PLATE 270, FIGS. 3 and 4.

Arnica terrae-novae proves to be more generally distributed on calcareous rocks and gravels of western Newfoundland than at first supposed (see p. 53). Furthermore, the beautifully prepared material, brought back from northern Labrador by Mr. Ernst C. Abbe of the Grenfell-Forbes Northern Labrador Expedition of 1931, supplementing that secured by Dr. R. H. Woodworth, shows that the Labrador plant which has erroneously passed as *A. alpina* (L.) Olin is *A. terrae-novae* (MAP 28); and Mr. Abbe and I find that *A. terrae-novae* extends to the west of Hudson Bay. From true *A. alpina* of subarctic Europe *A. terrae-novae* is at once distinguished by its much narrower basal leaves, its usually less scapose habit, and less lacerate ligules. *A. terrae-novae* is as nearly related to *A. attenuata* Greene, of northwestern America, as to the Scandinavian *A. alpina*. *A. attenuata* is of more delicate texture (drying paler-green), with usually more branching stems, and its basal leaves are clearly 5-nerved, with 2 outer less conspicuous nerves, the basal leaves of *A. terrae-novae* being clearly 3-nerved, sometimes with 2 faint laterals. In *A. terrae-novae* glandular

hairs abound at the summit of the peduncle and at the base of the involucre; in *A. attenuata* they are absent or completely hidden in the dense tomentum. No mature fruits of *A. attenuata* are available, but the flowering material suggests longer achenes and longer pappus.

The following belong to *A. TERRAE-NOVAE*. LABRADOR: Ekortarsuk, Cape Chudleigh, *C. S. Schmitt*, no. 312; on sandy old sea bottom, Head of Ryan's Bay, *Woodworth*, no. 428; on granitic rock, old sea beaches, Northwest Bank at Head of Ryan's Bay, *Woodworth*, no. 430; moist meadowy hillsides, Near Island, Seven Islands Bay, Kangalaksiorvik, *Abbe*, no. 572; 20 miles north of Nachvak, August 28, 1908, *H. S. Forbes*; moist gully in cliff on north side of Razorback Harbor, *Abbe*, no. 573; on granite cliffs at 150–600 m., Head of Nach-



Map 28. Range of ARNICA TERRAE-NOVAE.

vak Bay, *Woodworth*, no. 429; slaty talus slope, Rowsell Harbor, *Abbe*, nos. 570, 571; prope Hebron (as *A. angustifolia* Vahl), *Mentzel*; Hebron, August 4, 1908, *H. S. Forbes*. UNGAVA: Mosquito Bay, *A. P. Low*, Herb. Geol. Surv. Can. no. 23,019. NEWFOUNDLAND: turfey limestone barrens, Burnt Cape, Pistolet Bay, *Fernald et al.*, nos. 29,209, 29,210½; turfey limestone barrens, Cook Point, *Fernald & Gilbert*, no. 29,214; limestone barrens, one mile back of Savage Cove, Straits of Belle Isle, *Fernald & Long*, no. 29,207, *Fernald, Pease & Long*, no. 29,208; turfey and peaty margins of dry limestone barrens, Old Port au Choix, Eastern Point, Port au Choix and Gargamelle Cove, *Fernald, Long & Fogg*, nos. 2123–2126; limestone barrens, Green Gardens, Cape St. George, *Mackenzie & Griscom*, no. 11,039 (TYPE). MANITOBA: Kettle Rapids, July 15, 1917, *J. H. Emerton*. KEEWATIN: Maguse Lake, *W. C. Gussow*, no. 44 (seen since map 28 was engraved).

ARNICA CHIONOPAPPA Fern. RHODORA, vii. 148 (1905), xxvi. 105, t. 143, fig. 5 (1924). The commonest Arnica of western Newfoundland,

secured at many new stations on Bay of Islands, Bonne Bay, Ingornachois Bay and St. John Bay. PLATE 269, FIGS. 1 and 2.

Arnica chionopappa, originally described from Gaspé and adjacent northern New Brunswick, is of rather general range about the northern half of the Gulf of St. Lawrence. It is also frequent in Mackenzie and Alberta; and recently Professor F. K. Butters has brought me thoroughly characteristic material from northeastern Minnesota. It is probably of more general occurrence on calcareous areas across Canada (MAP 29). Rydberg, N. Am. Fl. xxxiv. 332 (1927) reduces the Gaspé *A. chionopappa* to *A. arnoglossa* Greene, of the Black Hills; and on the opposite page (333) describes the Newfoundland *A. chionopappa* as a new species, *A. Fernaldii* Rydb. I have before me 15 numbers of the Newfoundland plant, representing all stages from



Map 29. Range of ARNICA CHIONOPAPPA.

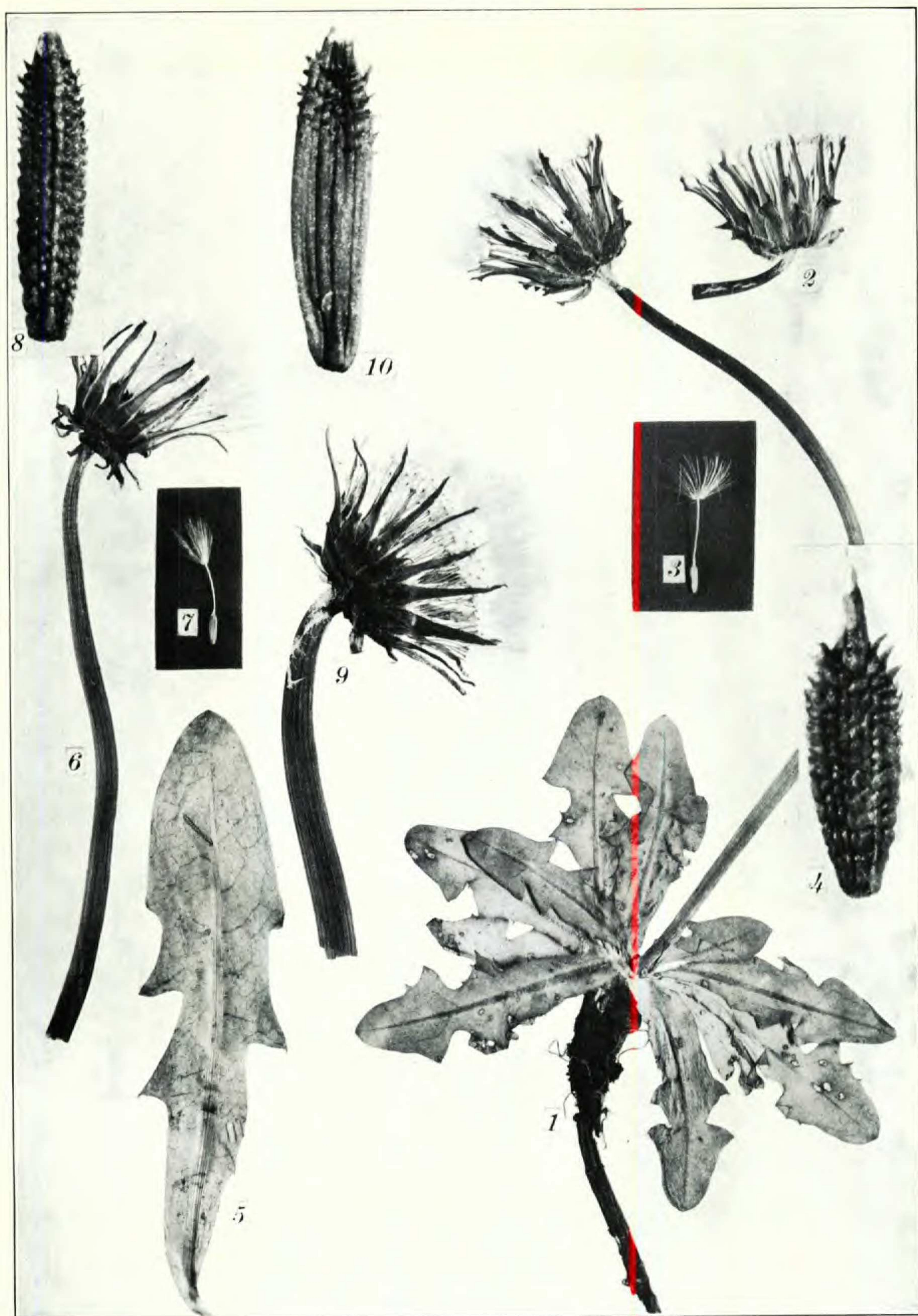
bud to ripe fruit, 19 numbers, similarly diverse in state of development, of the Gaspé plant, 3 numbers from Anticosti and 1 from New Brunswick. I am quite unable to detect any constant difference in the series. It is consistently different from the plant of the Black Hills, however (*A. arnoglossa*), in having pilose involucres, all the Black Hills material having them glandular-puberulent and scarcely pilose. The disk-corollas of *A. arnoglossa* are slenderly funnel-form, with exceedingly short pilosity on the tube; those of *A. chionopappa* (including *A. Fernaldii*) goblet-shaped, with the pubescence of the tube much longer than in *A. arnoglossa*. So far as material in the Gray Herbarium shows, *A. arnoglossa* is restricted to the Black Hills. The material from Alberta and Mackenzie, of which Dr. Raup has secured many numbers, seems inseparable from *A. chionopappa*. See pp. 51, 53, 81.

A. LOUISEANA Farr, Ott. Nat. xx. 109 (1906). *A. Griscomi* Fern. RHODORA, xxvi. 105, t. 143, fig. 7 (1924). To the one station heretofore known from Newfoundland add the following from ST. JOHN BAY and INGORNACHOIX BAY: turfy margins of gravelly limestone barrens, and turfy slopes below limestone barrens, Eastern Point, *Fernald, Long & Fogg*, nos. 2139, 2140; dominant on turfy talus of limestone sea-cliffs, Eastern Point, no. 2141; peaty and turfy knolls and banks bordering dry limestone barrens southwest of Port au Choix, no. 2142; turfy terraces and slopes on limestone barrens, Pointe Riche, no. 2143. PLATE 270, FIGS. 1 and 2.

Arnica Louiseana was described by Miss Farr from mountains about Lake Louise in the Canadian Rocky Mts. The original description emphasized the nodding flowering heads: "Heads of flowers 1-3, usually 3, fragrant, 4 cm. broad, borne on long, slender, nodding . . . peduncles"; and again "The pale yellow color of the flowers and their drooping tendency distinguish it from other Arnicas of the region." Furthermore, the colored illustration of the original collection made by Miss Farr's associate, Mrs. Schäffer,¹ shows a very small plant with definitely nodding small heads. Consequently, when the Gaspé plant with large erect flowering heads was studied, the highly localized species (*A. Louiseana*) of Lake Louise, more than 2200 miles away, was passed as certainly not to be further considered. Subsequently, three sheets of *A. Louiseana*, including an ISOTYPE of the species, have come to the Gray Herbarium. They all agree with the smaller individuals of *A. Griscomi* in every character; and in all of the 12 individuals under these numbers the flowering and fruiting heads are quite erect! It is surmised that, when Mrs. Schäffer made her drawing, which later influenced Miss Farr's diagnosis, the specimens had twisted or bent so that the peduncles had become curved at summit—one of the commonest mishaps in collecting. This assumed post-mortem bending toward the light of the peduncles in the plant drawn by Mrs. Schäffer hardly justifies the very fundamental separation of *A. Louiseana* from *A. Griscomi* in the North American Flora, xxxiv. part 4: 322-325 (1927). There Rydberg includes *A. Louiseana* in his § *Obtusifoliae*, "Heads nodding in anthesis"; while *A. Griscomi* is placed in two other sections, §§ *Alpinae* and *Arnoglossae*, with "Heads erect in anthesis."

We saw much of *Arnica Louiseana* about Port au Choix, where it makes extensive carpets (see p. 53). Its very young heads (in young bud) are somewhat nodding but when they expand they are quite

¹ Brown & Schäffer, Alp. Fl. Can. Rky. Mts. plate opp. p. 304 (1907).



TARAXACUM CERATOPHORUM: FIGS. 1 and 2, small plant and individual head, $\times 1$, from Newfoundland; FIG. 3, achene, with beak and pappus, $\times 1$; FIG. 4, achene, $\times 10$.

T. AMBIGENS: FIG. 5, small leaf, $\times 1$, from the TYPE, Port au Choix, Newfoundland; FIG. 6, head, $\times 1$, from the TYPE; FIG. 7, achene, with beak and pappus, $\times 1$, from the TYPE; FIG. 8, achene, $\times 10$, from the TYPE.

T. AMBIGENS, var. *FULTIOR*: FIG. 9, head, $\times 1$, from the TYPE, Gargamelle Cove, Newfoundland.

T. LAPPONICUM: FIG. 10, achene, $\times 10$, from Newfoundland.

erect. This species forms more extensive carpets than the others in Newfoundland, owing to a definitely stoloniferous habit. It has either variously leafy or bracted stems or is acaulescent (those who divide the *Senecioneae* primarily on habit and foliage could recognize a dozen artificial segregates from a single habitat). It varies in stature from 0.5–2.5 dm., with basal leaves 1.5–12 cm. long, and 0.6–3 cm. broad. The flowering branches may have 1–5 heads and these vary from 2.5–5 cm. broad.

The striking disruption of range (MAP 30) shown by *A. Louiscana* is a very frequent one, discussed at length in some other papers.



Map 30. Range of ARNICA LOUISEANA.

CIRSIUM MUTICUM Michx., forma **lactiflorum**, n. f., floribus lacteis.—NEWFOUNDLAND: talus of limestone cliff opposite Lomond, August 10, 1929, *Fernald, Long & Fogg*, no. 2151.

A considerable colony near the base of the cliff opposite Lomond has milk-white instead of the usual purple flowers.

C. PALUSTRE (L.) Scop. LOWER HUMBER VALLEY: "Railway gravel" near Humbermouth, 1910, *Fernald, Wiegand & Kittredge*, no. 4192; springy glades in spruce woods between Marble Mt. and Humbermouth, *Fernald, Long & Fogg*, no. 2153, *Fernald & Long*, no. 2154.

In 1910 Wiegand and I took *Cirsium palustre* to be an introduction, which we associated with the near-by railway. In 1929, however, the plant appeared like a native element in the wet glades and thickets, sharing them with strictly indigenous plants. See p. 15.

TARAXACUM IN EASTERN AMERICA.—The Dandelions of eastern North America consist of the common weeds, dominant and aggressive species difficult to eradicate and, like the majority of our weeds, brought recently from Europe; and a series of indigenous species which, for the most part, are local and non-aggressive, confined to strictly natural habitats of Labrador, Newfoundland, the Mingan Islands, Anticosti and Gaspé, only very rarely extending westward in

Quebec or southward into the Maritime Provinces and New England. The problem of working out the identities of the native species is difficult. The treatment of the genus by Handel-Mazzetti, *Monographie der Gattung Taraxacum* (1907), conservative, and very detailed for Europe and adjacent Asia, recognizes scores of local species there but, exclusive of the very distinct *T. mexicanum* DC., admits absolutely no endemic North American *Taraxaca* and, outside the two introduced species, cites for all temperate and boreal North America only 89 collections. As a sound basis for orientation Handel-Mazzetti's work is invaluable, but for detailed understanding of the genus in North America it is, obviously, unsatisfactory.

The only special study of the genus in North America is Sherff's *North American Species of Taraxacum*.¹ This paper was based upon study of much borrowed herbarium material; but, apparently, the author had had little, if any, intimate field-experience with native American *Taraxaca*. It is difficult for one who has watched, collected and studied the native species of Gaspé, western Newfoundland and Labrador through a period of thirty years to reach the conclusion of Sherff, that *T. lapponicum* Kihlm., with involucral bracts unappendaged and with the achenes (PLATE 271, FIG. 10) muricate only at the summit, is identical with *T. ceratophorum* (Ledeb.) DC. (PLATE 271, FIGS. 1-4), which has corniculate-appendaged bracts and the achenes muricate their whole length. Only by "lumping" very dissimilar plants as an "Herba valde polymorpha," to use Sherff's first descriptive phrase, could such a conclusion be reached. If *T. lapponicum*, *T. lacerum* Greene and *T. ceratophorum* are identical, the question naturally arises, why are not they further merged with *T. lyratum* (Ledeb.) DC.? The character relied upon in Sherff's key to distinguish *T. lyratum* ("Achaenia matura nigrescentia") is, to be sure, one upon which Handel-Mazzetti had placed confidence, but it is most difficult to find any emphatic color-difference in the achenes of *T. lyratum* and of *T. phymatocarpum* Vahl (which Sherff, unjustifiably, it seems to me, merges with it) and in those of many mature collections of *T. lapponicum* and other species which Sherff merges with *T. ceratophorum*. In *T. lyratum*, however, the slender achene (PLATE 272, FIG. 4) is very finely muricate only at summit; in *T. phymatocarpum* (PLATE 272, FIGS. 1-3) the stouter achene is coarsely muricate its whole length. I am, therefore, after collecting (or being associated

¹ Sherff, Bot. Gaz. lxx. 329-359, plates 31-33 (1920).

with the collecting of) nearly 150 numbers of indigenous *Taraxaca* and after watching their behavior in the field and observing the essential constancy of their technical characters, quite as unable to follow Sherff in his wholesale reduction of species as I am to subscribe to the wholesale multiplication of micro-species, *formae*, *biotypes* or *jordanons* as "species," at present so much in vogue in northern Europe.

The most fundamental character in *Taraxacum*, it seems to me, is in the mature achene, whether tuberculate its entire length or only at summit, whether with a slender or thick pyramid, and, lastly, whether rufescent or drab. The color is less satisfactory than the other characters, since it often changes as the fruit matures. The length of the filiform beak in mature fruit is, also, a very satisfactory character. Consequently, for really satisfactory study, *ripe fruit* is essential. Much immature or merely flowering material can be placed only approximately. The characters of the involucre are next in importance, whether with many or with few or no bracts corniculate. The leaf-base furnishes important characters. In our introduced species the leaf usually narrows below to a definite petiole; in most of the natives it is broad at base or broadly margined.

On these characters, which seem to be very real, our *Taraxaca* in northeastern America (exclusive of Greenland and the Arctic) seem to fall into 11 species, as follows:

- a. Mature achenes mostly tuberculate nearly or quite to the base; the tubercles, at least of the upper half, closely crowded; the surface of the achene without broad and plane intermediate areas. . . . b.
- b. Beak of achene only 2.5–5 mm. long: involucre blackish, 1–1.4 cm. high, with 10–12 inner bracts: leaves 2–8 cm. long, 3–8 mm. wide, oblanceolate, entire, dentate or sinuate: scapes commonly only 2–9 cm. long. . . . 1. *T. phymatocarpum*.
- b. Beak 6–17 mm. long: involucre green, purplish or livid, 1.2–3 cm. high, with 10–25 inner bracts: leaves mostly larger: scapes mostly taller. . . . c.
- c. Many of the involucre bracts with a conspicuous corniculate appendage or knob below the tip; the outer bracts short and appressed or, if elongate and recurving, definitely broader than the inner.
 Inner bracts 1.2–2 cm. long; their tips unappendaged or with appendages rarely if ever much exceeding or overtopping the bract-tips; outer calyculate bracts tightly appressed to and much shorter than the inner, firm, often with a conspicuous white scarious border: beak of fruit 6–14 mm. long. . . . 2. *T. ceratophorum*.
 Inner bracts 2–2.6 cm. long; their tips mostly with coarse appendages much longer than and often overtopping the bract-tips; outer calyculate bracts $\frac{2}{3}$ as long as the inner, finally loosely spreading or recurving, herbaceous, without broad margin: beak of fruit 13–17 mm. long. . . . 3. *T. laurentianum*.

- c. Most or all of the involueral bracts with plane and unappendaged tips; outer bracts thin and herbaceous, when strongly recurving scarcely or but slightly broader than the inner.
All or nearly all the leaves with broad bases; their margins shallowly dentate to sinuate-lobed, the teeth and lobes mostly entire: inner involucre 1.3–2 cm. high, during anthesis with bracts separated to within 1 or 2 mm. of the base; their herbaceous central portion 1–3 mm. wide, with scarious margin 0.2–1. mm. broad at base: achenes pale-brown or reddish, narrowly oblanceolate, 3.8–4.5 mm. long (excluding the pyramid): beak 6–9 mm. long. 4. *T. ambigens.*
- All or nearly all the leaves tapering below to slender petioles; their margins with mostly sharply toothed deltoid lobes or teeth: inner involucre 1.5–2.7 cm. high, during anthesis with the bracts united at base for 3–6 mm.; their herbaceous central portion 1.6–4 mm. wide, with white scarious margin 1.3–1.5 mm. broad at base: achenes olivaceous, gray or fuscous, cuneate 2.8–3.8 mm. long (excluding the pyramid): beak 9–12 mm. long. 5. *T. latilobum.*
- a. Mature achenes tuberculate only above the middle or, if occasionally toward the base, the tubercles remote and with broad plane intermediate areas or bands. . . . d
- d. All or at least many of the involueral bracts corniculate-appendaged. . . . e.
- e. Achenes grayish, drab, pale-brown or olivaceous; pappus bright white: upper faces of ligules orange-yellow: leaves dentate, shallowly sinuate or deeply lobed.
Leaves linear-oblanceolate, subentire, dentate or sinuate, if sinuate or dissected with mostly entire narrowly deltoid lobes: outer calyculate bracts of involucre closely appressed or barely spreading: pyramid of fruit stout, one-half to quite as broad as long; beak of fruit 5.5–8.5 mm. long. 6. *T. lacerum.*
- Leaves narrowly obovate-lanceolate or broadly oblanceolate, deeply sinuate, with the linear-caudate lobes lacerate at the deltoid base and with shorter intermediate narrow lobes: outer calyculate bracts loosely spreading, recurving at maturity: pyramid slender, 3–4 times as long as broad; beak 10–13 mm. long. 7. *T. Longii.*
- e. Achenes red or reddish-purple: pappus creamy or sordid: upper faces of ligules sulphur-yellow: leaves mostly dissected nearly or quite to the midrib. 8. *T. laevigatum.*
- d. All or nearly all the involueral bracts unappendaged. . . . f.
- f. Achene subtruncate or strongly rounded below the short pyramid: the upper third of each rib with 4 or more sharp murications; pyramid 0.3–1 mm. long.
Leaves usually narrowed below to a slender scarcely winged petiolar base; at least the lower and longer marginal lobes toothed and with frequent intermediate small teeth: achenes (excluding the slender pyramid) 2–4 mm. long, drab or olivaceous. 9. *T. palustre.*
- Leaves mostly broad at base or with broadly winged petiole; marginal lobes entire or with few teeth; intermediate teeth few or none: achenes (excluding pyramid) 3.5–5 mm. long, olivaceous to fulvous. . . 10. *T. lapponicum.*

f. Achenes attenuate into the long pyramid, smooth throughout or with 1-3 murications at the summit of each angle; pyramid 1.5-2 mm. long.....11. *T. torngatense*.

1. *T. PHYMATOCARPUM* Vahl in Hornem. Fl. Dan. xiii. fasc. xxxix. 6, t. mmccclxxxviii. fig. 12 (1860); Handel-Mazzetti, Mon. Gat. Tarax. 58, tt. II. fig. 8 and IV. fig. 12 (1907). *T. lyratum* Sherff, Bot. Gaz. lxx. 332 (1920), in part, not DC. (including t. xxxi. fig. g).—Arctic America and arctic eastern Asia; with us known only from NEWFOUNDLAND: dry limestone crest of northern half of Burnt Cape, Pistolet Bay, Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss, no. 29,254. See p. 121. PLATE 272, FIGS. 1-3.

Taraxacum phymatocarpum, with the very closely allied, if not inseparable, *T. hyparcticum* and *T. pumilum* Dahlst., is a typical high-arctic plant, characterized by its very small heads, with black involucre of few bracts, its short and stout, very strongly muricate, fuscous achene and its very short beak. The recent collections from Labrador, made by my students and others under my direction who have made a specialty of collecting *Taraxacum*, *Arnica*, *Antennaria*, *Euphrasia* and other critical genera, contain none of it, though it is to be expected in northernmost Labrador. As already stated, I am unable to follow Sherff in reducing *T. phymatocarpum* to *T. lyratum* (Led.) DC. *T. lyratum* came originally from the region of Behring Straits ("in lapidosus summae alpis ad. fl. Tschuja contra ostium fl. Tschegan") and its habit was beautifully shown in Ledebour's plate. Material in the Gray Herbarium from Arakamtchetchene Island (C. Wright in Herb. U. S. No. Pacif. Expl. Exped.) is from close by and is quite like Ledebour's original plate. This is the plant of arctic Northwestern America which extends southward as an alpine species to Arizona. Its very distinctive achene is shown in PLATE 272, FIG. 4.

In view of the concentration in the North of *Taraxacum lyratum* and *T. phymatocarpum* and their allies, it is peculiarly notable that the subantarctic species, the so-called § *Taraxaca antarctica* of Handel-Mazzetti (*T. magellanicum* Commerson and *T. melanocarpum* and *T. cygnorum* Handel-Mazzetti) of Chile, South Australia, New Zealand and Chatham Island, should be so close to *T. phymatocarpum*. For comments on this bipolar relationship in *Lesquerella*, *Antennaria* and in many other groups see pp. 269 and 335.

2. *T. CERATOPHORUM* (Led.) DC. Prodr. vii¹. 146 (1838); Handel-Mazzetti, l. c. 62, in large part, t. II. fig. 11 (1907); Sherff, l. c. 338, in small part (1920). *Leontodon ceratophorus* Led. Icon. Pl. Fl. Ross. i. 9, t. 34 (1829). *T. vulgare*, var. *ceratophorum* (Led.) Trautv. Pl. Sib. 76 (1877), name only.—A wide-ranging boreal species, known in

our area only from Labrador, western Newfoundland and southeastern Quebec. LABRADOR: rock-crevices, Rock Island, 15 miles nw. of Ford Harbor, *Harlow Bishop*, no. 606a; base of cliff, Dead Islands, lat. 52° 48', *J. A. Allen*, no. 59. NEWFOUNDLAND: crevices of trap cliffs, Sacred Island, Straits of Belle Isle, *Fernald & Long*, no. 29,239; mossy and turfy trap cliffs and talus, Anse aux Sauvages, Pistolet Bay, *Fernald, Wiegand & Long*, no. 29,240; shelves, crests and talus of diorite cliffs, Ha-Ha Point, *Fernald & Long*, no. 29,238; turfy or gravelly shelves, crests or talus of diorite, Ha-Ha Mountain, *Pease & Griscom*, nos. 29,241, 29,242; springy meadow at base of Ha-Ha Mt., *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,262; turfy limestone barrens, Cook Point, Pistolet Bay, *Fernald & Gilbert*, no. 29,237 (broad-leaved form); sandy and turfy upper border of limestone beach, Cook Point, *Fernald & Gilbert*, no. 29,243 (dwarf form, distributed as *T. groenlandicum*); dripping limestone ledges, Cook Point, *Fernald, Gilbert & Hotchkiss*, no. 29,264; turfy or peaty pockets in limestone ledges, Sandy (or Poverty) Cove, *Fernald, Long & Dunbar*, no. 27,171; turfy borders of limestone beach, Gargamelle Cove, Ingornachoix Bay, *Fernald, Long & Fogg*, no. 2172. QUEBEC: limestone shingle, crest (625 ft.) of Les Murailles, Percé, August 17, 1904, *Collins, Fernald & Pease*; gravelly banks of Grand River, Gaspé Co., June 30–July 3, 1904, *Fernald*; calcareous cliffs and talus, Gros Morne, Gaspé Co., *Fernald & Weatherby*, no. 2482; summit of talus and bases of calcareous cliffs west of Rivière aux Marsouins, Gaspé Co., *Fernald & Weatherby*, no. 2477; limestone and limestone-conglomerate ridges from Pointe aux Corbeaux to Cap Caribou, Bic, *Fernald & Collins*, no. 1210; rock-crevices, Cap Orignal, Bic, *Fernald & Collins*, no. 792, *Rousseau*, no. 26,708; Pointe sud-ouest du Cap Orignal, Bic, *Rousseau*, nos. 31,004, 31,006. PLATE 271, FIGS. 1–4.

As American *Taraxacum ceratophorum* I have taken the plant which seems nearest to match the highly conventionalized plate of Ledebour. Much material quite unlike it has been thrust into *T. ceratophorum* by Sherff; but, without a more extended study of species proposed by Greene, Rydberg and others in western North America, I am not prepared to state the exact range of *T. ceratophorum* in the West. Good material from the Cascade Range in British Columbia is shown by sheets from Mt. McLean, near Lillooet, July, 1916, *J. M. Macoun*, nos. 98, 693 and 98,696; and Dr. Raup has brought back many numbers from northern British Columbia. The most extreme plant related to *T. ceratophorum*, in having copiously tuberculate achenes and conspicuously appendaged involucre bracts, is a species of shores of the Gulf of St. Lawrence which has sometimes been distributed as *T. ceratophorum*, more often as *T. dumetorum* Greene; but, since Greene explicitly states that his *T. dumetorum* has the "achenes

. . . spinulose at summit, otherwise smooth," it is not satisfactory to place the plant of the Gulf of St. Lawrence with it. Some other characters are evident on comparing the Rocky Mountain plant which I take to be *T. dumetorum*. It has a smaller head (the inner involucre 1.5–2 cm., in the Laurentian plant 2–2.6 cm. high; its outer bracts are shorter and very scarious or broadly scarious-margined, the long outer bracts of the Laurentian plant herbaceous. Its achenes (PLATE 272, FIG. 10), as already stated, are smooth below, and its mature beak 7–8 mm. long; the Laurentian plant having the larger mature achenes rough throughout and with beaks 13–17 mm. long. I am therefore proposing the latter as

3. *T. laurentianum*, sp. nov. (TAB. 272, FIGS. 5–9), planta robusta; foliis oblanceolatis tenuibus 1–3 dm. longis 2–5 cm. latis, basi late marginatis, marginibus duplo dentatis, dentibus longioribus argutis lanceolatis vel anguste deltoideis 0.3–1.3 cm. longis; scapo crasso 1–3.5 dm. alto; capitulis magnis; bracteis exterioribus herbaceis viridibus vel purpurascentibus late lanceolatis vel anguste ovatis 1.5–2 cm. longis 4–8 mm. latis adscendentibus deinde patentibus vel recurvatis apice planis vel valde corniculatis, corniculis bractee apicem valde superantibus; bracteis interioribus 18–25 lineari-lanceolatis 2–2.6 cm. longis valde corniculatis, corniculis ovatis bractee apicem majoribus; ligulis croceis dorso fuscis; achaeniis griseo-olivaceis cuneato-oblongis 3.2–4 mm. longis apice acute muricatis basin versus obtuse muriculatis; pyramide subulata 1.2–2 mm. longa; rostro 13–17 mm. longo; pappo 7–10 mm. longo gilvo-lacteo.—Western Newfoundland and eastern Quebec. NEWFOUNDLAND: springy meadow at base of Ha-Ha Mountain, Ha-Ha Bay, July 17, 1925, Fernald, Wiegand, Long, Gilbert & Hotchkiss, no. 29,245, TYPE in Gray Herb. (distributed as *T. ceratophorum*); turfy spots on slaty calcareous talus, Cutwater Head, Bay of Islands, July 16, 1929, Fernald, Long & Fogg, no. 2174; turfy spots on slaty calcareous talus, Cod Cove, Bay of Islands, July 16, 1929, no. 2175. QUEBEC: sur les calcaires, Ile St.-Charles, Archipel de Mingan, 26 juillet 1924, Victorin & Rolland, no. 18,396 (as *T. ceratophorum*), 20 juillet 1926, no. 25,181; sur les calcaires du côté sud, Ile à la Chasse, Mingan, 26 juillet 1924, no. 18,397; cailloutis calcaires, Grande Ile à Bouleau, Mingan, 29 juillet 1926, no. 25,178; sur le sable de goulet, Rivière la Loutre (Est), Anticosti, 3 août 1927, Victorin & Rolland, no. 27,559. See pp. 50, 51.

Taraxacum laurentianum is the eastern American counterpart of the northern Skandinavian *T. Hjeltii* Dahlst. That, however, has the inner involucre only 1.7–2 cm. long, the outer bracts with white scarious margin, the pyramid at most 0.75 mm. long and the beak at most 1 cm. long. Its relationship to the western American *T. dumetorum* has been noted. The large collections of the latter brought back

from Alberta and British Columbia by Dr. H. M. Raup greatly reinforce my opinion that it is a very definite western American species.¹

4. *T. ambigens*, sp. nov. (TAB. 271, FIGS. 5-8), planta subgracilis; foliis oblanceolatis tenuibus 0.3-3 dm. longis 1-3 (-6) cm. latis basi late marginatis, marginibus dentatis vel sinuatis, lobis horizontaliter divergentibus vel refractis triangularibus plerumque integris 0.3-1.5 cm. longis; scapo 0.4-6 dm. alto; capitulis mediocribus; bracteis exterioribus herbaceis lineari-lanceolatis 0.8-1.3 cm. longis 1.5-3 mm. latis, reflexis apice plerumque planis; bracteis interioribus 10-20 lineari-lanceolatis 1.1-1.9 cm. longis apice planis; ligulis croceis; achaeniis pallide brunneis vel rufescentibus anguste oblanceolatis 3.8-4.5 mm. longis apice acute muricatis basin versus obtuse muriculatis; pyramide 0.5-1 mm. longa; rostro 6-9 mm. longo; pappo 5-8 mm. longo lacteo.—Southern Labrador, western Newfoundland and eastern Quebec. LABRADOR: springy banks and damp hillsides, Forteau, July 30, 1910, *Fernald & Wiegand*, no. 4210. NEWFOUNDLAND: swales and wet peaty limestone barrens, Capstan Point, Flower Cove, July 27, 1924, *Fernald, Long & Dunbar*, no. 27,175 (as *T. latilobum*); shaded base of limestone sea-cliff, Port au Choix, July 27, 1929, *Fernald, Long & Fogg*, no. 2167 (TYPE in Gray Herb.); turfey limestone shore, Sandy Cove, Ingornachoix Bay, August 9, 1924, *Fernald, Long & Dunbar*, no. 27,177 (as *T. latilobum*); calcareous cliffs, Steady Brook Falls, lower Humber Valley, July 16, 1910, *Fernald & Wiegand*, no. 4209 (as *T. ceratophorum*). QUEBEC: limestone and calcareous sandstone terraces, Blanc Sablon ("Labrador"), July 30, 1910, *Fernald & Wiegand*, no. 4211 (as *T. ceratophorum*); damp ledges and alluvium, R. Ste. Anne des Monts, August 3-17, 1905, *Collins & Fernald* (as *T. ceratophorum*); wet calcareous ledges, Grand Cascapedia R., July 12-15, 1905, *Williams, Collins & Fernald* (as *T. ceratophorum*).

Var. *fultior*, var. nov. (TAB. 271, FIG. 9), bracteis exterioribus ovatis vel ovato-lanceolatis 5-8 mm. longis 2.5-4 mm. latis erectis.—NEWFOUNDLAND: turfey limestone slopes east of Big Brook, Straits of Belle Isle, July 16, 1925, *Fernald, Wiegand & Hotchkiss*, no. 29,260 (as *T. ceratophorum*); turfey talus of limestone headland, Gargamelle Cove, Ingornachoix Bay, July 20, 1929, *Fernald, Long & Fogg*, no. 2163 (TYPE in Gray Herb.). QUEBEC: mossy meadows at 455 m. (1500 ft.) to 915 m. (3000 ft.), Fernald Basin, between Mts. Mattaouisse and Fortin, July 22, 1922, *Fernald & Pease*, no. 25,342 (as *T. ceratophorum*, altered to *T. lapponicum*), July 8, 1923, *Fernald, Griscom, Mackenzie, Pease & Smith*, no. 26,116 (as *T. ceratophorum*, altered to *T. lapponicum*).

¹ Just as this discussion of *Taraxacum* is to be paged, beautiful material of *T. dumetorum* from within the area here covered comes to hand: from shaded cliffs, Northern Slate Island, Thunder Bay District, Ontario, July 6, 1933, *A. S. Pease & R. C. Bean*, no. 23,576. Its characters are discussed in the treatment of *T. ceratophorum*.

Taraxacum ambigens, as clearly indicated in the citations, has been confused with *T. ceratophorum*, *T. lapponicum* and *T. latilobum*. In foliage it is very like the first two and quite unlike *T. latilobum*, which has the slender-petioled leaves copiously double-dentate. The involucre is essentially that of *T. lapponicum* and without the corniculate appendages and the firm and white-bordered outer bracts of *T. ceratophorum*; but the achenes in all mature heads are copiously tuberculate or muriculate to the base, as in both *T. latilobum* (PLATE 273, FIG. 5) and *T. ceratophorum* (PLATE 271, FIG. 4). This series has been a constant source of perplexity, thrown first into one species because of the involucre, then into another because of the leaves and, again, into a third because of the achenes. With *T. ambigens* taken out, the entanglement which has confused the identities of *T. ceratophorum* and *T. lapponicum* in eastern America is removed. That *Taraxacum ambigens* is not a hybrid of *T. lapponicum* and *T. ceratophorum* is quite clear. At only 1 of the 16 stations for the latter has *T. ambigens* been found, although these areas have all been closely scrutinized for all *Taraxaca*. *T. ambigens* may eventually have to be reduced to one of the Cordilleran species of Greene, Rydberg or Nelson. Its strongly muriculate achenes seem to keep it apart; but a number of their proposed species were based on very young material of which ripe achenes were unknown.

5. *T. LATILOBUM* DC. Prodr. vii¹. 146 (1848). *Leontodon latilobum* (DC.) Britton in Britt. & Brown, Ill. Fl. ed. 2, iii. 315, fig. 4063 (1913).—Newfoundland to New England. NEWFOUNDLAND: without definite locality, 1826, *La Pylaie* in herb. DC. (TYPE), tracing in Gray Herb.; turfey limestone shore, St. Barbe, Fernald, Long & Dunbar, no. 27,176; grassland, Old Port au Choix, Fernald, Long & Fogg, no. 2159. QUEBEC: calcareous cliffs and talus, Gros Morne, Gaspé Co., Fernald & Weatherby, nos. 2479–2481; grès schisteux, Tourelle, Rousseau, no. 31,145. MAINE: gravelly thicket, Orono, Fernald, no. 2397 (as *T. officinale*); rocky slope, Dennysville, Fernald & Weatherby, no. 2483; damp soil, Cutler, July 2, 1902, Kennedy, Williams, Collins & Fernald. MASSACHUSETTS: low woodland dump, Beverly Farms, June 23, 1913, F. T. Hubbard; Lanesboro, July 17, 1917, J. R. Churchill.

Taraxacum latilobum has the aspect of very broad-leaved *T. palustre*, var. *vulgare* (*T. vulgare* (Lam.) Schrank, *T. officinale* Weber) but its achenes (PLATE 273, FIG. 5) are very strongly muriculate quite to the base as in *T. ceratophorum*. The abundantly naturalized European species, to which Handel-Mazzetti and others have referred *T. latilobum* has, as they describe them, the achenes tuberculate at sum-

mit, "parte superiore ($\frac{1}{4}$ usque $\frac{1}{2}$ fere) tuberculis largis brevioribus longioribusve obsita"—*Handel-Mazetti*. *T. latilobum* is apparently indigenous from Newfoundland and Gaspé to central and eastern Maine, but at its Massachusetts stations it seems like an introduction.

6. *T. LACERUM* Greene, *Pittonia*, iv. 230 (1901). *T. ceratophorum* Liebm. & Lange, *Fl. Dan.* xv. fasc. xlv. 7, t. mmdclix. (1861), not DC. *T. mutilum* Greene, l. c. 232 (1901); *T. groenlandicum* Dahlst. *Arkiv. Bot.* v. no. 9: 23, tt. 14 and 15 (1906). *T. arctogenum* Dahlst. l. c. 26, t. 16 (1906).—Greenland and Arctic America, south to Labrador, northwestern Newfoundland and the Mingan Islands, Quebec, and in the West to the Rocky Mts. in the upper Peace River region. LABRADOR: near mouth of stream emptying into south side of East Bay, Ikordlearsuk, lat. $59^{\circ} 57'$, *Abbe & Odell*, nos. 593, 594; moist meadowy hillside, Near Island, Seven Islands Bay, Kangalaksiorvik, lat. $59^{\circ} 25'$, *Abbe*, no. 595: top of ridge, north of harbor, Razorback Harbor, lat. $59^{\circ} 14'$, *Abbe*, no. 596; moist gully in cliff on north side of Razorback Harbor, *Abbe*, no. 597; gravelly beach, Mouth of Frazer River, lat. 57° , *Harlow Bishop*, no. 606; Nain, *C. S. Sewall*, no. 142; hill back of Mission Park, Hopedale, lat. $55^{\circ} 27'$, *Abbe & Hogg*, no. 592. UNGAVA: Ungava River, *Spreadborough*, no. 14,395 (as *T. ceratophorum*). NEWFOUNDLAND: dry limestone barrens, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 29,254a; dry gravelly limestone barrens, St. John Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,266. QUEBEC: sur les calcaires, Ile Quin, Archipel de Mingan, *Victorin & Rolland*, nos. 18,398, 18,399.

Taraxacum lacerum, originally described (in 1901) from the Upper Liard in northern British Columbia, was collected in the same general area (on Mt. Selwyn) in great diversity of numbers by Dr. Hugh M. Raup and his companions in 1932. Dr. Raup's very full material shows every transition to Greene's *T. mutilum* (1901) from Alaska and it is quite inseparable from the Greenland, Labrador and Newfoundland specimens which Dahlstedt has identified as his own *T. groenlandicum* (1906). I am, furthermore, unable to find satisfactory distinctions to separate *T. arctogenum* (1906), a co-type of which is in the Gray Herbarium. Dahlstedt, in publishing *T. groenlandicum*, cited material from Melville Peninsula. It is in the Herbarium of the Carnegie Museum from Southampton Island; and in the Gray Herbarium from Dawson Trail, Yukon (*Tyrrell*, no. 23,101), Herschell Island, Yukon (*Frits Johansen*, no. 98,717) and Point Barrow, Alaska (*Murdock*). The species is, then, widely dispersed in Arctic America,

with extensions south to the Gulf of St. Lawrence and to the northern Rocky Mts.

7. *T. Longii*, sp. nov. (TAB. 273, FIGS. 1-4), planta subgracilis; foliis anguste obovato-lanceolatis vel late oblanceolatis valde laciniato-sinuatis 1-1.5 dm. longis 3-5 cm. latis, lobis linearicaudatis ad basin versus deltoideis laceratis; scapo 0.9-2 dm. longo; capitulis magnis; bracteis exterioribus ovatis vel oblongis purpureo-tinctis 6-10 mm. longis 3-5 mm. latis apice plus minusve corniculatis in calathio erectis deinde laxe patentibus vel recurvantibus; bracteis interioribus 10-12 lanceolatis 1.6-2.4 cm. longis cornubus parvis plerumque praeditis; ligulis croceis; achaeniis griseo-olivaceis vel pallide brunneis oblanceolatis 3.5-4 mm. longis apice acute muricatis basin versus planis; pyramide subulata 1.2-1.5 mm. longa; rostro 1-1.3 cm. longo; pappo 7-8 mm. longo albo.—Northwestern Newfoundland and southeastern Quebec. NEWFOUNDLAND: springy meadow at base of Ha-Ha Mountain, Ha-Ha Bay, Fernald, Wiegand, Long, Gilbert & Hotchkiss, no. 29,244, as *T. lacerum* (TYPE in Gray Herb.); turfey crests of limestone ledges, Flower Cove, Fernald, Long & Dunbar, no. 27,170 (as *T. lacerum*). QUEBEC: limestone gravel, banks of Grand River, Gaspé Co., June 30-July 3, 1904, Fernald (as *T. dumetorum*).

Taraxacum Longii is one of the complex group of which *T. ceratophorum* is the type. From that species, as here interpreted, it differs in its doubly incised-dentate leaves, the recurving, broader and more herbaceous outer bracts, the tiny appendages of the inner bracts and the achenes smooth below the summit. From *T. lacerum*, to which it was previously referred, by its broader and doubly incised leaves and the more herbaceous and soon reflexing outer bracts. From *T. dumetorum* it is at once distinguished by its very characteristic leaf, by the herbaceous (rather than scarious) and more appendaged, shorter outer bracts, by the fewer inner bracts and by the longer pyramid of the fruit. *T. Longii* is related to *T. macroceras* Dahlst. of Siberia, but that has the outer bracts appressed and with much longer horns, the inner narrower than in *T. Longii*, and the fulvous achenes with a very short (0.5 mm. long) pyramid. The only other species to which *T. Longii* seems to approach is *T. norvegicum* Dahlst.; but that has a shorter involucre, with much narrower bracts, the outer appressed, the pyramid short and the beak at most 6 mm. long.

8. *T. LAEVIGATUM* (Willd.) DC. Cat. Hort. Monspel. 149 (1813); Handel-Mazzetti, l. c. 109, t. III. fig. 11 (1907); Sherff, l. c. 356 (1920). *Leontodon laevigatus* Willd. Sp. Pl. iii. 1546 (1800). *T. erythrospermum* Andr. in Bess. Enum. 75 (1822); Fernald, Bot. Gaz. xx. 323 (1895). *L. erythrospermum* (Andr.) Eichw. Naturhist. Skizze Litth. Volhyn. 150 (1830); Britton in Britt. & Brown, Ill. Fl. ed. 2, iii. 316, fig. 4064

(1913).—Dryish open soil, southern Quebec to southern British Columbia, south to Virginia, Missouri and New Mexico (acc. to *Sherff*); naturalized from Europe. First collected in America, apparently, in 1886; now widely dispersed.

9. *T. PALUSTRE* (Lyons) Lam. & DC. Outer bracts of involucre ovate to oblong-lanceolate, erect, finally loosely spreading.—*Fl. Franç.* iv. 45 (1805), in part, but including name-bringing synonym, not *T. palustre* (Ehrh.) Dahlst. Bot. Not. 1905: 145 (1905) and *Arkiv. Bot.* vii. no. 6: 8 (1908). *Leontodon palustre* Lyons, Fasc. Pl. 48 (1763); Sm. Engl. Bot. viii. 553 (1799) and *Fl. Brit.* ii. 823 (1800). *L. Raji* Gouan, Ill. et Obs. Bot. 55 (1773). *L. Taraxacum*, δ . *palustre* (Lyons) Huds. Fl. Angl. ed. 2, i. 339 (1778). *T. officinale*, β . *palustre* (Lyons) St.-Amans, Fl. Agenaise, 324 (1821); Fernald, RHODORA, iv. 157 (1902). *L. Taraxacum palustris* (Lyons) Gaudin, Fl. Helv. v. 62 (1829). *T. officinarum*, δ . *palustre* (Lyons) Maly, Fl. Deutschl. 241 (1860).—Grasslands, especially damp or wet, or damp slopes, Newfoundland and Quebec to southern New England, rarely to Pennsylvania; naturalized from Europe. The earliest American collections seen were made in Vermont in 1896.

Var. **vulgare** (Lam.), comb. nov. Outer bracts linear or linear-lanceolate, strongly reflexed even in bud.—*Leontodon Taraxacum* L. Sp. Pl. ii. 798 (1753), in part; and many later authors. *L. vulgare* Lam. Fl. Franç. ii. 113 (1778). *T. officinale* Weber ex Wiggers, Prim. Pl. Holst. 56 (1780). *T. vulgare* (Lam.) Schrank, Prim. Fl. Salzburg, 193 (1792); Handel-Mazzetti, l. c. 88, t. III. fig. 2 (1907); Sherff, l. c. 350 (1920). *L. officinalis* (Weber) With. Arr. Brit. Pl. ed. 3, iii. 679 (1796), excl. var. *T. Dens-leonis* Desf. Fl. Ant. ii. 228 (1800). *L. Taraxacum*, δ . *vulgare* (Lam.) Benth. Cat. Pl. Indig. Pyr. Bas Langued. 94 (1826). *T. Dens-leonis*, var. *officinale* (Weber) Coss. & Germ. Fl. Env. Paris, ii. 432 (1845), as to name-bringing synonym. *T. Taraxacum* (L.) Karsten, Deutsch. Fl. 1138 (1880–83).—Grasslands and clearings, a ubiquitous and aggressive weed, Newfoundland to southern Alaska, south through much of the United States; naturalized during colonial days from Europe.

The necessity to reverse the names of our two large olive- or drab-fruited weedy Dandelions, one the ubiquitous weed with the outer bracts narrow and strongly recurved from the first, the other a weed of Newfoundland, eastern Canada and New England (rarely in Pennsylvania) with shorter and broader appressed or merely spreading outer bracts, is most disconcerting. It results, however, from the failure of those who have monographed our *Taraxaca* to trace the names involved to their ultimate sources. It is, to say the least, uncomfortable, in following the rules of Nomenclature now in vogue, to find one's self unwillingly appearing as an iconoclast, in changing to a very awkward combination the technical name of a cosmopolitan weed.

It is certainly to be hoped that a less cumbersome and more appropriate designation may eventually be found.

In the present case Handel-Mazzetti, in his *Monographie der Gattung Taraxacum* (1907), merged, as *T. paludosum* (Scop.) Schlechter (1866), the real *T. paludosum*, i. e. *Hedypnois paludosa* Scop. Fl. Carn. ii. 100, t. 48 (1772) and the wholly different *T. palustre* (Lyons) Lam. & DC. (1805). Handel-Mazzetti cited definitely in the synonymy of *T. paludosum* the *T. palustre* Lam. & DC. (1805), *Leontodon Taraxacum* var. *palustre* With. (1787) and *L. palustre* Smith (1800) and, as a plant intermediate between *T. vulgare* and *T. paludosum*, the *L. Taraxacum*, δ . *palustre* Hudson (1778)—the latter incorrectly cited by Handel-Mazzetti as a binomial ("*L. palustre* Hudson"), which Hudson did not make. Had he checked the citations, he would have detected that the original use of the name *T. palustre* was for a plant utterly unlike *T. paludosum*. Smith (1800), Withering (1787) and Hudson (1778), at the points cited by Handel-Mazzetti, all definitely carried the reference back to "*Lyons. Fasc. 48*"; but the failure of recent monographers to do so has caused the present upheaval in nomenclature.

Furthermore, this failure of European students of *Taraxacum* to follow *T. palustre* to its nomenclatural source has led to another confusion. Thus, the combination *T. palustre* was properly published in *Flore Française*, iv.45 (1805), where Lamarck & DeCandolle made the same confusion as did Handel-Mazzetti later of "*Leontodon palustre*. Smith, Fl. brit. 2. p. 823" and *Hedypnois paludosa* Scop. The circumstance, that Lamarck & DeCandolle had mixed elements, in no wise changes the fact that NOMENCLATURALLY their *T. palustre* (1805) rested upon its name-bringing synonym, *L. palustre* Sm. (1800), therefore, upon *L. palustre* Lyons (1763), the latter reference given without qualification by Smith as his source. Nevertheless, although the name *T. palustre* already had perfectly valid publication for one species (in 1805), we find the new combination, *T. palustre* (Ehrh.) Dahlstedt, Bot. Notiser, 1905: 145 (1905) and Arkiv Bot. vii. no. 6: 8 (1908), based on *Leontodon Taraxacum palustre* Ehrh. (1790), not *L. palustre* Lyons (1763) nor *L. Taraxacum*, δ . *palustre* (Lyons) Huds. (1778), put forward and now being used in Skandinavian literature for a species of another section!

Israel Lyons' account, in his *Fasciculus Plantarum circa Cantabrigiam Nascentium* (1763), was as follows:

89. LEONTODON (*palustre*) calyce toto erecto glabro, scapo cavo unifloro. Leontodon calyce toto erecto glabro, foliis longe ellipticis denticulatis. Gmel. sib. 2. 15 ?
 Habitat in palustribus, on Hinton Moor, primus observavit D. Car. Miller.
 Folia radicalia oblonga, ad apicem latiora, acuta denticulata glabra, nervo medio rubro. Scapus teres cavus uniflorus. Calyx glaber imbricatus, squamae externae ovatae acutae margine submembranaceae erectae; internae lineares. Receptaculum nudum, Pappus pilosus denticulatus stipitatus.

Lyons' *Leontodon palustre* was well characterized nine years earlier than *Hedypnois paludosa* Scop. and, were the two conspecific, Lyons' name would have to be taken up instead of that of Scopoli. The "Folia radicalia oblonga, ad apicem latiora" and the "squamae externae ovatae acutae margine submembranaceae erectae" of Lyons' description indicate, however, that he had the variation of the common dandelion of meadows, lawns and fields with short and appressed outer bracts, not the wholly different *T. paludosum* (Scop.) Schlechter, a plant with thick linear-oblongate mostly unlobed leaves only 3–10 mm. wide, small heads with white-margined outer bracts, pale flowers and large achenes (5 mm. long) with very long pyramids. Smith, Engl. Bot. viii. t. 553 (1799), published a good plate of Lyons' species, after studying plants "raised from seed sent from Cambridgeshire" (the type-region). This plate and a number of sheets of specimens collected in England as *T. palustre* seem to leave no question that the common weed with linear or lanceolate strongly recurving outer bracts, *Leontodon vulgare* Lam. (1778), *T. officinale* Weber (1780), *T. Dens-leonis* Desf. (1800), differs from *Leontodon palustre* Lyons (1763) only in that single fickle character and that, consequently, the earliest specific name, *palustre*, must be used for the aggregate-species.

One way out of this awkward situation would be to treat the two as different species, which I am unable to do, in view of the fact that I cannot consider them specifically distinct. The only other possible way to avoid taking up *T. palustre* for the common weed, which usually passes as *T. officinale* or as *T. vulgare*, is to recognize the "accidental binomial," "*Dens leonis vulgaris*" of Hill, Brit. Herb. 441 (1756). There are many very strong objections to such a course. In the first place, Hill was not regularly using binomials; all other plants enumerated on the page, as well as on the preceding page, had polynomials. Furthermore, the double generic name *Dens leonis* is wholly irregular and it is quite possible to view *Dens leonis vulgaris* as a trinomial.

To save the long-established name, *T. vulgare*, by going back to Hill for its justification does not seem the proper course. Either horn of the dilemma is unsatisfactory, but the cause of sound nomenclature, so long as the existing rules are in force, calls, unhappily, for the taking up of *T. palustre* (Lyons) Lam. & DC. for the less common weed of Europe and America; and *T. palustre*, var. *vulgare* for the superabundant weed of fields and lawns. Under the constructive and conservative (therefore discarded) "Kew Rule" this change would have been unnecessary.

If we could see with the eyes of some Scandinavian and English botanists, we should recognize in *Taraxacum palustre* many scores of species. Every slight divergence in the cutting of the leaves or the color of the corollas or the shade of the achenes would become a "species," and the weeding of a village park would yield at least a dozen of them. Personally, I can match the specimens on the lawn outside my window with authentic sheets of ten of Dahlstedt's "specific" propositions. Sound taxonomy demands good balance; if specific values are universally reduced to the point of absurdity the old and honored science of taxonomy will be doomed. The argument that, because often parthenogenetic, therefore vegetatively reproducing, these divergencies or biotypes in *Taraxacum* are self-perpetuating, could be applied equally to any vegetatively reproduced garden sport. Genetically they are not species nor anything but trivial variations which, under normal sexual reproduction, would quickly be lost in a common blend. They are no more species than are the color-forms of many garden flowers or the variously colored garden forms of cereals. Unless the *Taraxaca* have very real and deep-seated differences of involucre, flower and fruit and definite geographic segregation, it seems like stultification of science to treat them as species. We must not ignore the facts that all plastic and modern species consist of innumerable minor trends, but that these slight tendencies are utterly different from the true ("Linnean") species which, through millions of years, have stood the long test of competition and physiographic change. Call the minor variants *jordanons*, if you will, or the good and more generally used *formae* or the more modern *biotypes* but keep the good old term SPECIES for SPECIES. Shifting of meaning does not clarify terminology.

10. *T. LAPPONICUM* Kihlman, Meddel. Soc. Faun. Fl. Fenn. xi. 108 (1884); Handel-Mazzetti, l. c. 73 (1907), in part. *T. croceum* Dahlst.

in Anderss. & Hesselmen, Bih. K. Svenska Vet.-Ak. Hdlg. xxvi³. No. 1: 12 (1900).—Arctic and subarctic Eurasia and North America, south with us to Newfoundland and eastern Quebec. LABRADOR: Port Burwell, *Ralph Robinson*, no. 69; granitic rock, at Head of Main Arm of Ekortarsuk Bay, *Woodworth*, nos. 441, 445; ridge (ca. 320 m.) extending south from East Bay, Ikordlearsuk, lat. 59° 55', *Abbe & Odell*, nos. 585; on granitic rock, North Shore of Duck Bight, 1 km. n. of Ryan's Bay, *Woodworth*, no. 437; granitic rock under 760 m., Razorback Mt., Ryan's Bay, *Woodworth*, no. 439; tundra above the anchorage, Ryan's Bay, lat. 59° 35', *Abbe & Odell*, nos. 588, 589; dry gravelly slopes, Near Island, Seven Islands Bay, Kangalaksiorvik, lat. 59° 18', *Abbe*, no. 591; valley of Komaktorvik R., lat. 59° 15', *Abbe*, no. 587; moist gully in cliff on north side of Razorback Harbor, lat. 59° 14', *Abbe*, nos. 582, 584, 590; granitic cliffs, Head of Nachvak Bay, *Woodworth*, no. 438; Rama, *Sornberger*, nos. 64, 64x; granitic rock, Kikkertasoak Island, Saglek Bay, *Woodworth*, no. 436; Ogualik Island, lat. 57° 56', *E. D. Brooks, jr.*, no. 586; lower ridge (ca. 595 m.) east of The Valley of the Twin Falls, Cape Mugford Peninsula, lat. 57° 50', *Abbe*, no. 581; gravelly moraine, Mouth of Frazer R., lat. 57°, *Harlow Bishop*, no. 604; Anatolak, *C. S. Sewall*, nos. 334, 336; Titterasuk, *Sewall*, no. 12; wet spruce woods, Nain, lat. 56° 33', *Sewall*, no. 66, *Harlow Bishop*, no. 605; Hopedale, *Sewall*, no. 176; "The Park," Hopedale, *Abbe, Hogg, & Forbes*, nos. 579, 580; Battle Harbor, *Sewall*, no. 193. NEWFOUNDLAND: swaley cleft in bare rock, top of Fishing Head, St. Anthony, *Abbe*, no. 577; peaty and turfy brookside, Quirpon Island, *Fernald & Long*, no. 29,258; springy slopes and brooksides at head of Mauve (or Noddy) Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,259; mossy brooksides and damp turfy slopes, Sacred Island, *Fernald & Long*, no. 29,253; turfy limestone barrens, northern half of Burnt Cape, Pistolet Bay, *Fernald et al.*, nos. 29,250, 29,261 (as *T. ceratophorum*); turfy limestone barrens, Cook Point, *Fernald & Gilbert*, no. 29,251; turfy limestone slopes, Big Brook, Straits of Belle Isle, *Fernald & Long*, nos. 29,247, 29,257, *Fernald, Wiegand & Hotchkiss*, nos. 29,248, 29,249, 29,265; turfy slope by sea, Four-Mile Cove, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 29,263; turfy or peaty limestone barrens, Sandy (or Poverty) Cove, Straits of Belle Isle, *Fernald, Long & Dunbar*, no. 27,174, *Fernald & Griscom*, no. 29,256 (distributed as *T. groenlandicum*); mossy glades back of Savage Cove, *Fernald & Long*, no. 29,246; swales and peaty limestone barrens, Capstan Point, Flower Cove, *Fernald, Long & Dunbar*, no. 27,172; turfy limestone headlands and shores south of Flower Cove, *Pease, Long & Gilbert*, no. 29,255 as *T. ceratophorum* (2 or 3 bracts corniculate, but involucre otherwise of *T. lapponicum* and achenes of the latter); dripping quartzite cliffs and ledges, upper Deer Pond Brook, Highlands of St. John, *Fernald & Long*, no. 29,252; springy meadow on quartzite slope near head of Yellow Brook, Doctor Hill, *Fernald, Long & Fogg*, no. 2108; turf overlying limestone, Grassy

Island, St. John Bay, *Fernald, Long & Fogg*, no. 2173; turfy talus of limestone sea-cliffs, Eastern Point, St. John Bay, *Fernald, Long & Fogg*, nos. 2161, 2162, 2166; turfy talus of limestone sea-cliffs or on limestone barrens, Pointe Riche, *Fernald, Long & Fogg*, nos. 2164, 2165, 2171; dry peaty limestone barrens, Gargamelle Cove, *Fernald, Long & Fogg*, no. 2162; turfy spots on slaty calcareous talus, Cod Cove and Cutwater Head, Bay of Islands, *Fernald, Long & Fogg*, nos. 2169, 2170. QUEBEC: gravelly thicket back of strand, Bradore, *Fernald & Wiegand*, no. 4212 (as *T. ceratophorum*); grassy hillside, Rivière à la Truite and grassy bank, Pointe Jones, Brest, *St. John*, nos. 90,790, 90,791; sur les platières, R. du Brick, Anticosti, *Victorin & Rolland*, no. 27,552; au pied du grand Cap à l'embouchure, R. Vaureal, Anticosti, no. 27,553; sur les platières argilo-calcaires, R. Chicotte, Anticosti, no. 27,556; dans la prairie sur le plateau, Pointe du Sud-Ouest, Anticosti, no. 27,557; sur les rivages calcaires, R. de la Chute, Anticosti, no. 27,558; calcareous alpine meadow, alt. 1000–1125 m., Table-top Mts., *Fernald & Collins*, no. 789 (as *T. ceratophorum*); canyon humide, cirque nord-est, Botanist Dome, Mt. de la Table, *Rousseau & Fortier*, no. 31,500; by alpine brooks or in wet crevices of hornblende schist, alt. 600–1075 m., Mt. Albert, *Fernald & Collins*, nos. 263, 785 (as *T. ceratophorum*); sur les schistes hornblendiques et les paragneiss, alt. 1000 m., Lac du Ruisseau du Plaque-Malade, Mt. Albert, *Victorin, Rolland, Brunel & Rousseau*, no. 17,537; subalpine meadows (alt. 850–880 m.) Fernald Pass, between Mts. Mattaouisse and Fortin, *Fernald, Griscom & Mackenzie*, no. 26,117 (as *T. ceratophorum*); banks of Grand River, Gaspé Co., June 20–July 10, 1903, *G. H. Richards*, June 30–July 3, 1904, *Fernald*; wet red sandstone bluffs and steep slopes, between Baldé and the Baie des Chaleurs, Bonaventure River, August, 1904, *Collins, Fernald & Pease*; damp ledges and cliffs between the Forks and Brûlé Brook, Little Cascapedia R., July, 1904, *Collins, Fernald & Pease*. PLATE 271, FIG. 10.

It is probable that several of the plants described from the Rocky Mts. by Greene, Rydberg and others belong to *Taraxacum lapponicum*. Without better fruit than they described the proper disposition of these species must await fuller collections.

11. *T. torngatense*, sp. nov. (TAB. 273, FIGS. 6–9). Planta gracilis; foliis tenuibus lineari-oblongatis 0.5–1.8 dm. longis 1–2.5 cm. latis, basi longe-petiolatis, margine lobis oblique deltoideis integris; scapo 0.7–1.5 dm. longo; capitulis mediocribus; bracteis exterioribus fuscescentibus lanceolatis 5–8 mm. longis erectis vel subpatentibus apice planis; bracteis interioribus 12–15 lineari-lanceolatis 13–16 mm. longis apice planis vel rariter subcorniculatis; achaeniis cinnamomeis vel rufescentibus anguste fusiformibus 4–4.5 mm. longis apice ad pyramide attenuatis emuricatis vel rariter submuricatis; pyramide subulata 1.5–2 mm. longa; rostro 5–6 mm. longo; pappo albido 5–6 mm. longo. NORTHERN LABRADOR: granite rock, North Shore of